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VINYLITE *Plastics*

ELASTOMERIC COMPOUNDS

BAKELITE CORPORATION

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VINYLITE
ELASTOMERIC COMPOUNDS
Plastics

APPLICATIONS IN INDUSTRY

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FOREWORD

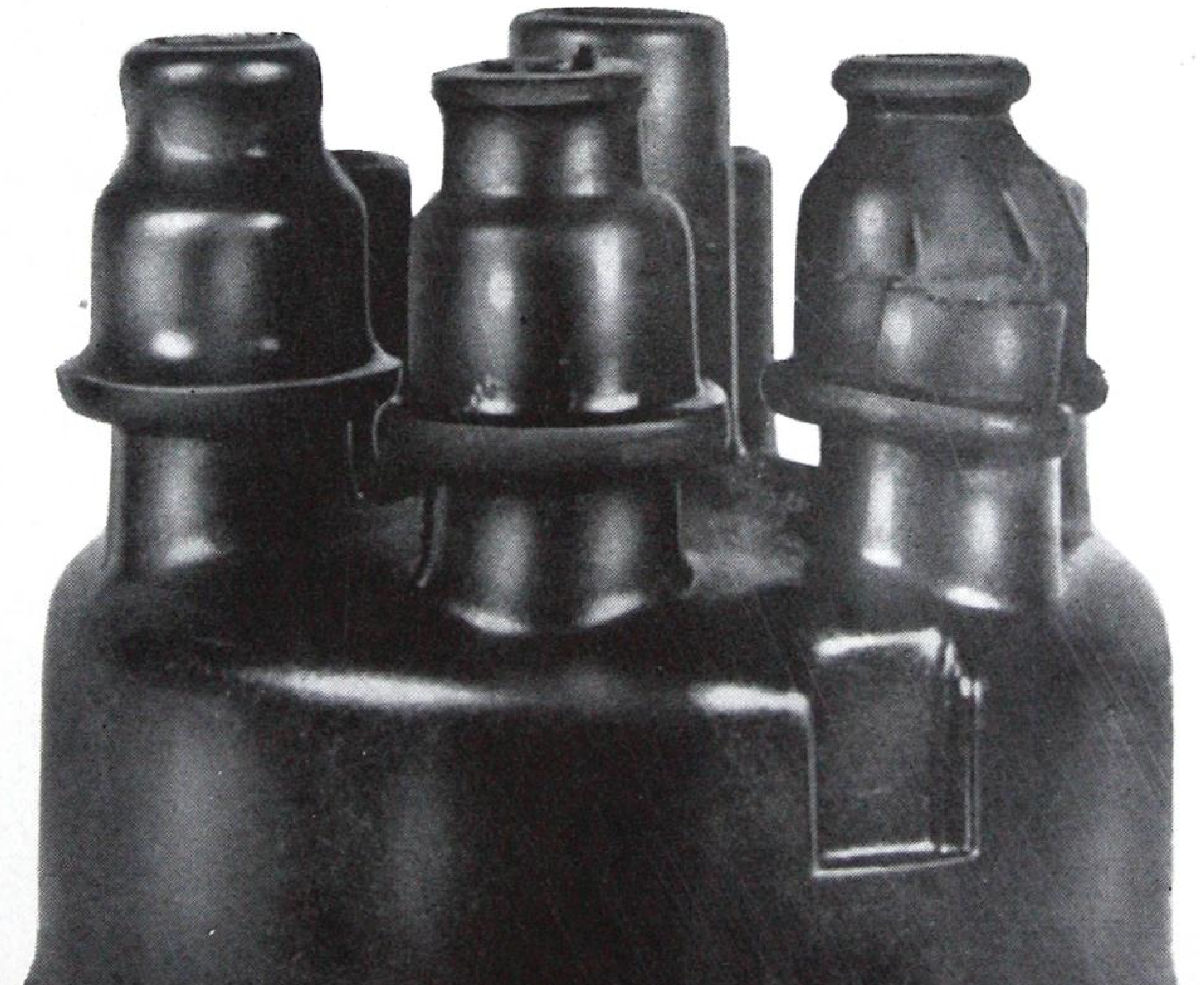
This booklet describes the forms, properties, and industrial applications of a relatively new type of plastic based on vinyl chloride-acetate resins—VINYLITE elastomeric plastic compounds. Since their introduction a few years ago, they have found wide use in industry as flexible materials which may be molded, extruded, calendered as sheeting and film, or coated on cloth.

These new compounds are valuable additions to the resources of the designer and engineer, who, by studying their possibilities and applying them, may plan and produce better products for today and tomorrow. If further information concerning these plastics is desired, the services of the technical representatives of Bakelite Corporation are available without obligation.

"VINYLITE" ELASTOMERIC COMPOUNDS

The first modern synthetic plastics were rigid materials. These plastics, both thermosetting and thermoplastic, serve efficiently throughout industry, but they are not applicable where specifications call for flexibility. In answer to this demand, the laboratories of Union Carbide and Carbon Corporation, of which Bakelite Corporation is a unit, developed from one of these rigid materials a distinctively serviceable and practical engineering plastic—VINYLITE elastomeric plastic compounds. These compounds present industry with practical, flexible, resilient plastic products, and the fields of use for plastics have been again considerably expanded.

VINYLITE elastomeric compounds are obtained by compounding vinyl chloride-acetate resin with a plasticizer. The flexibility of the resulting compound varies from a soft, rubbery state to semi-rigid, depending on the type and amount of plasticizer used. In addition, these compounds are noted for their excellent water resistance, high dielectric strength, chemical resistance, oxidation resistance, and resistance to weathering, abrasion, and flexing. Some of these compounds resist oils and greases, and others possess non-flammability. They may be produced in a complete color range, and consequently are an important factor wherever color is specified as



In one laboratory test run at room temperature, nipples of different materials were kept under tension as in actual service and exposed to concentrated ozone for 6 hours. Natural rubber nipple (at right) is ruined. Synthetic rubber nipple (center) is cracked. VINYLITE elastomeric compound nipple (left) is still unimpaired.

an integral element in a product. So that designers may choose those particularly suited to their needs, these compounds are supplied in various formulations and in various forms such as molding compounds, extrusion compounds, flexible sheeting and film, and cloth-coating resins.

Molding Compounds

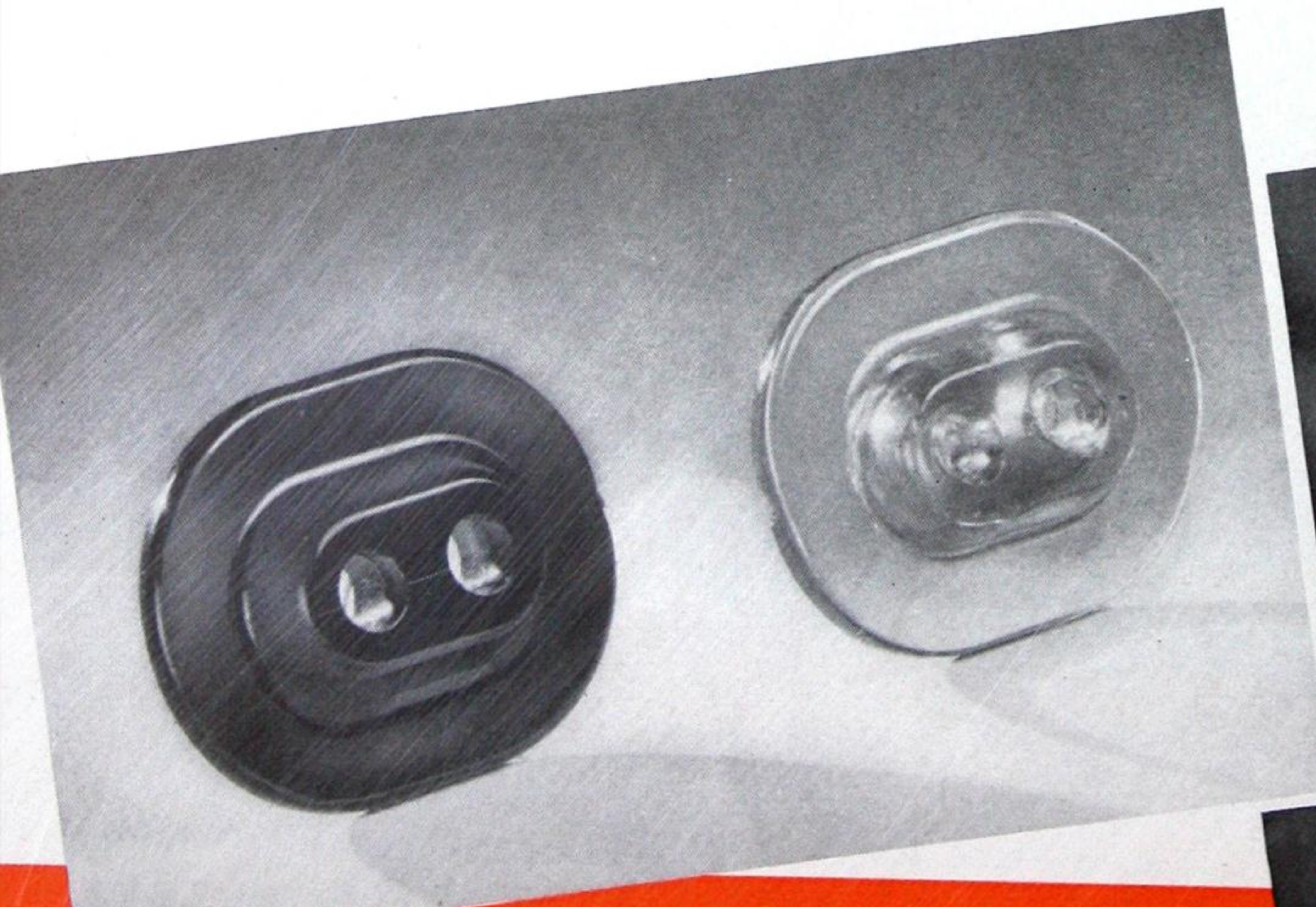
VINYLITE elastomeric molding compounds assure a molded plastic product that is durable, efficient, and attractive in appearance. The resins, properly modified with pigment, filler where needed, plasticizer, and dye, are supplied to molders in granular form. They can be molded by either the compression or injection method. Injection molding is the more desirable method of fabrication, however, since it effects lower operating costs and affords speedier production.

Injection molding is that process by which the molding material is softened by heat in a closed chamber and injected by pressure through an orifice into a closed mold. The finished article hardens and sets in the mold, and is quickly ejected. VINYLITE elastomeric molding compounds can be formed easily and economically in dies where undercuts and inserts are necessary parts of the product design, as the flexibility of a product molded from these materials permits its ready removal from the mold. Molds may be designed so that up to one hundred pieces can be molded during one injection cycle, the number of pieces molded depending on the size and shape of the product. After the products have been molded, trimming of the excess material completes the fabricating operation. Consequently, the final cost of products molded from VINYLITE elastomeric compounds is frequently quite low. The table on page 18 illustrates the properties of VINYLITE elastomeric molding compounds.

Applications

Whether the designer specifies automotive windshield weather stripping resistant to rain and ice, or a distributor cap nipple resistant to ozone, VINYLITE elastomeric compounds meet specifications, and provide a lasting, durable product.

Distributor cap nipples molded of these compounds possess a long service life. Such nipples, which act as insulators where electrical wiring connects with distributor terminals, resist water



A storage battery bushing injection molded of VINYLITE elastomeric compounds, has a highly polished surface equivalent to that of a rigid plastic part.

Devices such as this tiny wire terminal sleeve, injection molded of transparent VINYLITE elastomeric compounds, protect and insulate wiring system connections of aircraft.

and oils, possess a tenacious grip, good insulation characteristics, and high resistance to ozone.

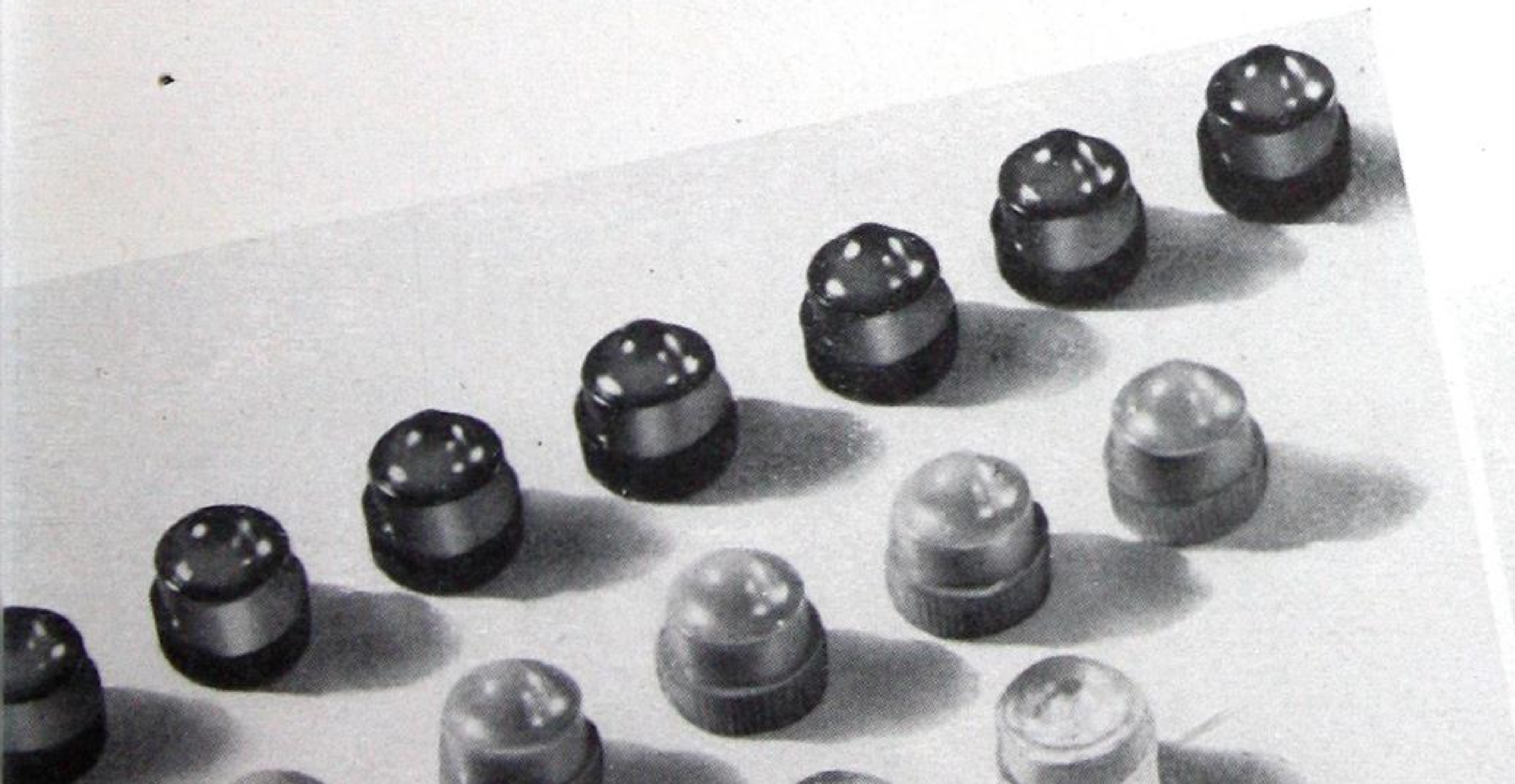
The durability and flexibility of VINYLITE elastomeric compounds have lengthened the service life and increased the efficiency of many other types of automotive applications. Tire valve caps molded of these compounds automatically thread themselves when first pressed on the valve stems and adhere tightly. Consequently, air cannot escape readily through the valve stem, nor can extraneous substances enter the stem. In one test, a valve stem was loosened to permit leakage, and a plastic cap was applied. This cap held so tenaciously that the air did not escape from the inner tube although the car was driven for several days. Once applied, caps may be screwed on and off whenever desired.

When automotive vehicles are shipped overseas, small plastic plugs are fitted firmly into the vent holes of distributor caps, and act as protective seals against moisture and other elements which might attack the vital parts of the distributor. When the vehicle reaches its destination, the plugs are pulled and the distributor is ready for use. VINYLITE elastomeric compounds are especially suitable for this type of application since they provide adequate protection against salt air, and assure a tight-fitting plug that will not work loose.

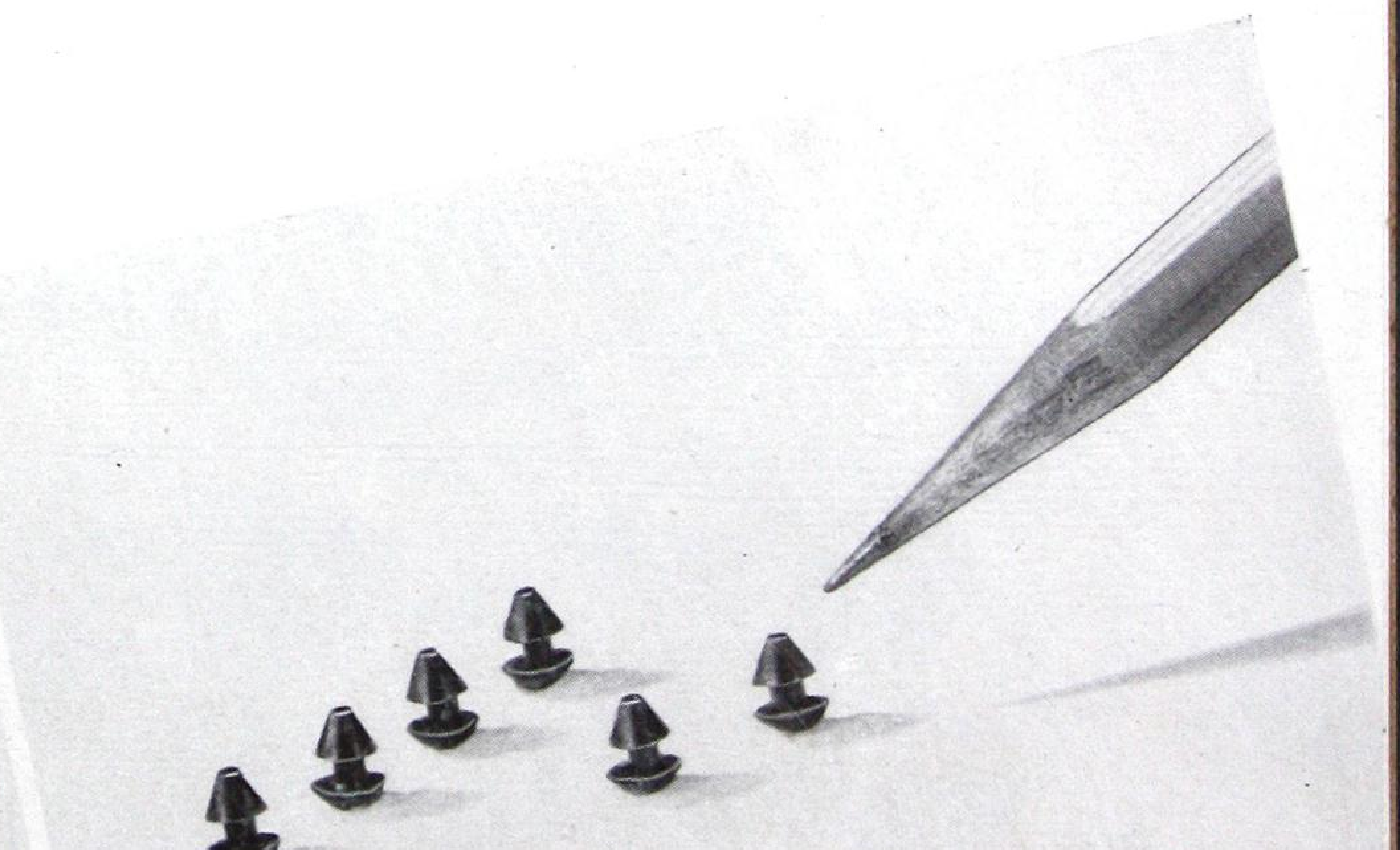
The wear-life of various types of bumpers has been increased and unnecessary noise eliminated by the resiliency and shock-deadening characteristic of VINYLITE elastomeric compounds. Elevator door shock absorbers or bumpers molded of these compounds soften the repeated shock of door closing, and stand up under the abuse of lengthy service without appreciable wear or deterioration. For automotive use, a small force-fit bumper is designed to stop both noise and wear of truck hoods as they vibrate against the frame of the car. The design of this unit prevents it from working free and becoming lost, yet it is easily removed by compressing the stem. In each of these products, the resistance of VINYLITE elastomeric plastics to oxidation is as important as their resistance to water and oil.

Grommets molded of these plastics resist water, chemicals, oil, aging, and abrasion, and thus assure the efficient performance of many types of equipment. They may be produced in a variety of sizes. The outer diameter, the inner diameter, and the thickness may be varied to meet practically any requirement.

The range of application of VINYLITE elas-



Self-threading valve caps, molded in a choice of colors, hold tight.

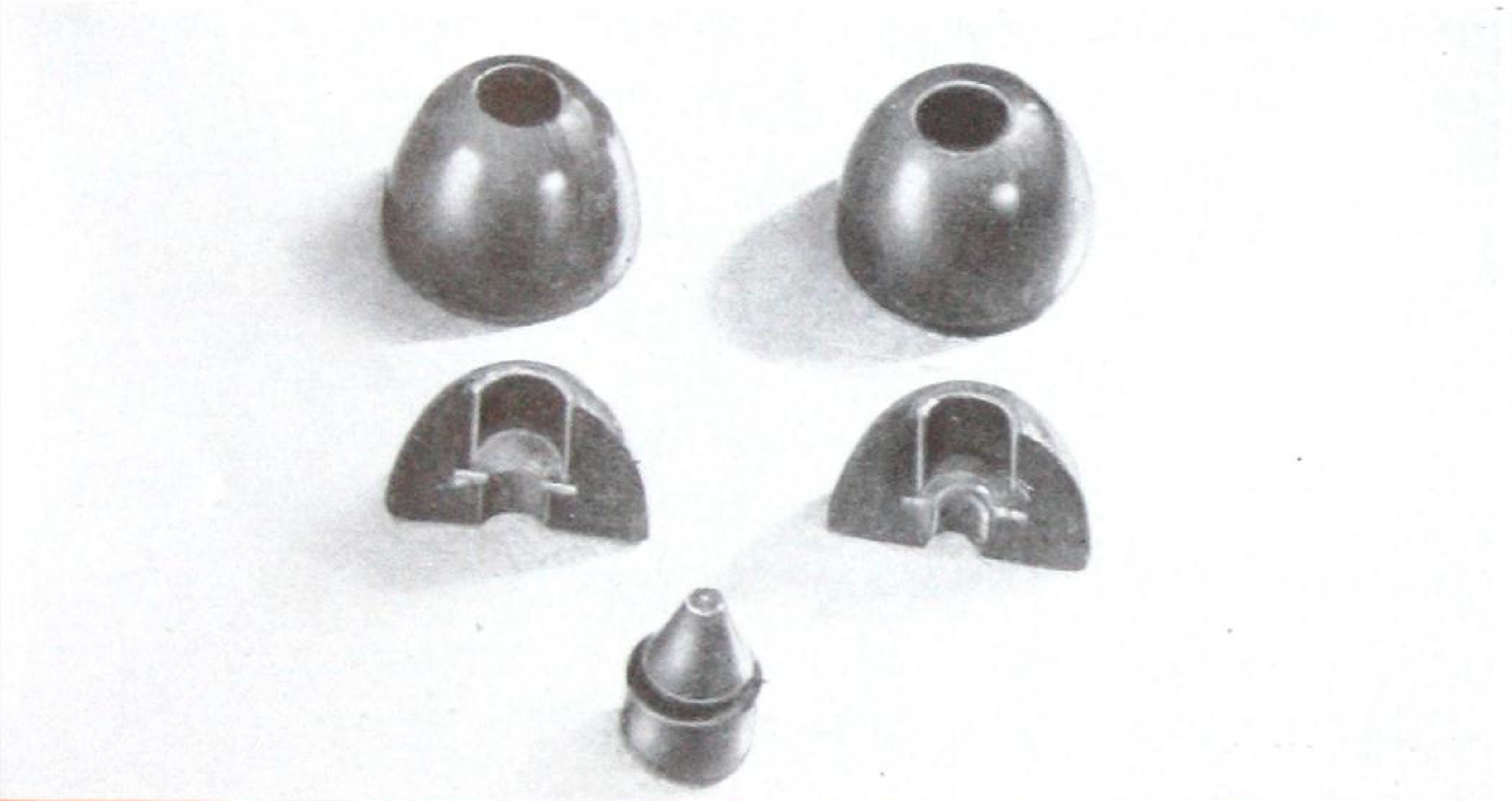


Tiny elastomeric plastic seals protect distributor cap vents against dirt and moisture.

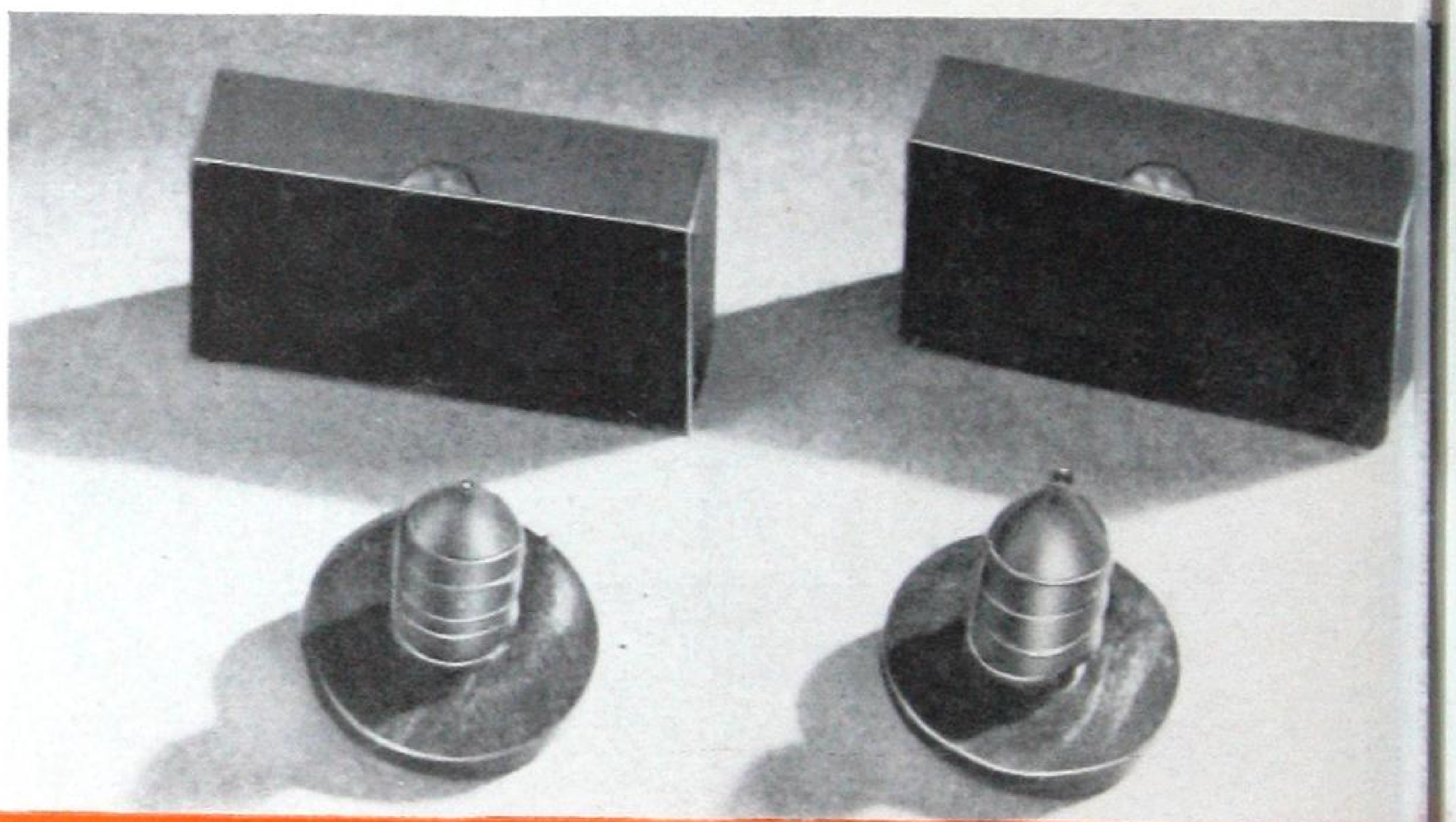
tomeric molding compounds is not restricted to one product or even to the products of one particular industry. Automobile knobs and pedal pads molded of these materials are soft and flexible, yet extremely durable. Terminal insulators for aircraft wiring, transparent to permit inspection of terminals, possess high mechanical and dielectric strength. In the home, various appliances molded of Vinylite elastomeric molding compounds are colorful additions to the kitchen, yet they withstand oils, greases, and fruit acids. In industry, Vinylite elastomeric compounds offer lasting service as safety goggle caps, carbon rod collets which resist electrolytic solutions, lens rings for industrial flashlights, electrical plugs, and gaskets.

A few potential applications of these compounds are:

Printing Rolls
Control Knobs
Pump Suction Cups
Floor Mats
Washers
Window Seal Sections
Door Knob Covers
Colorful, Flexible Toys
Shoe Heels
Nose Guards for Athletes
Furniture Knobs

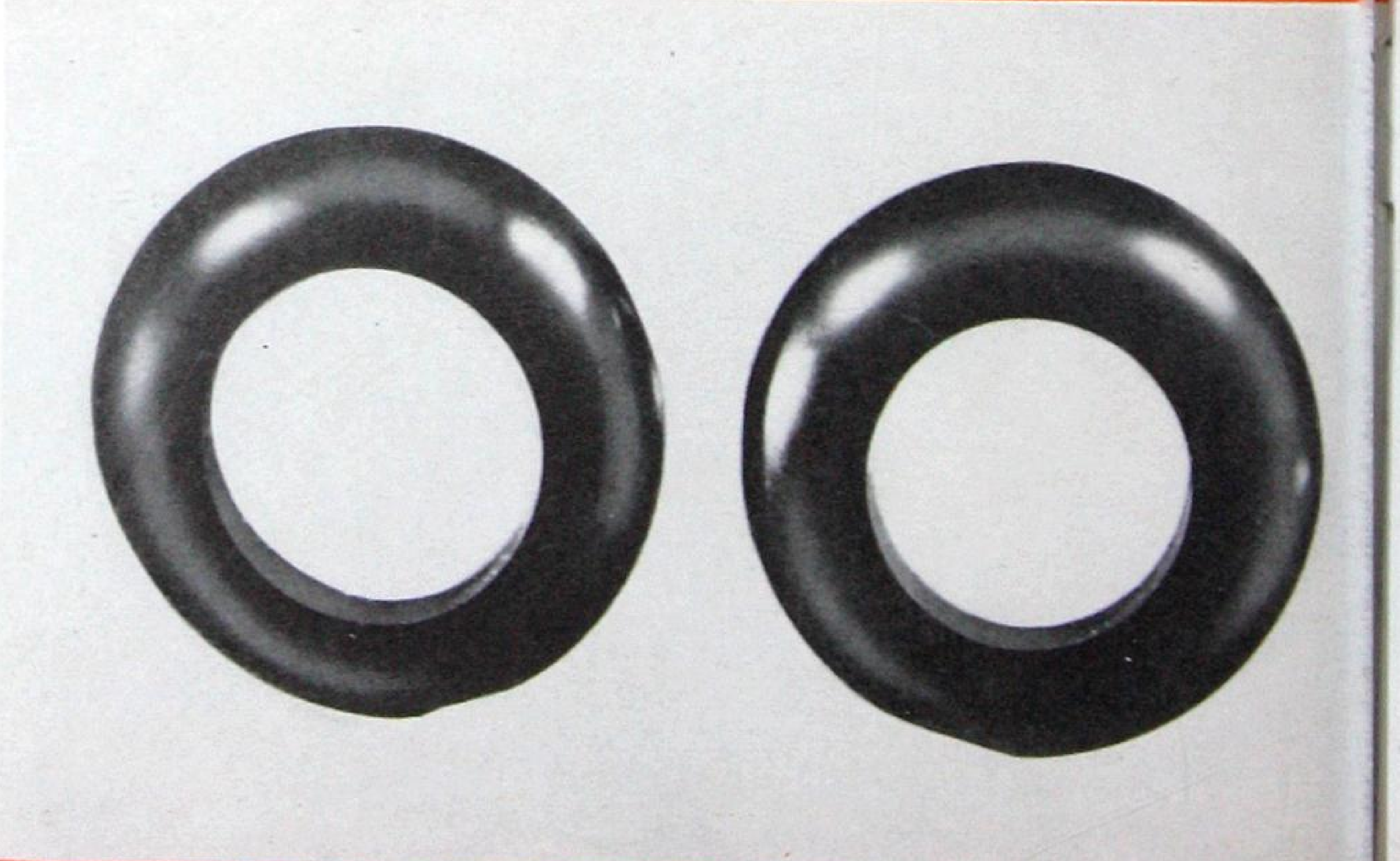


Top: Elevator door bumper includes a molded insert for screw which attaches it to door. Center: Cross section shows metal insert. Bottom: Small bumper used between motor hoods and car bodies.

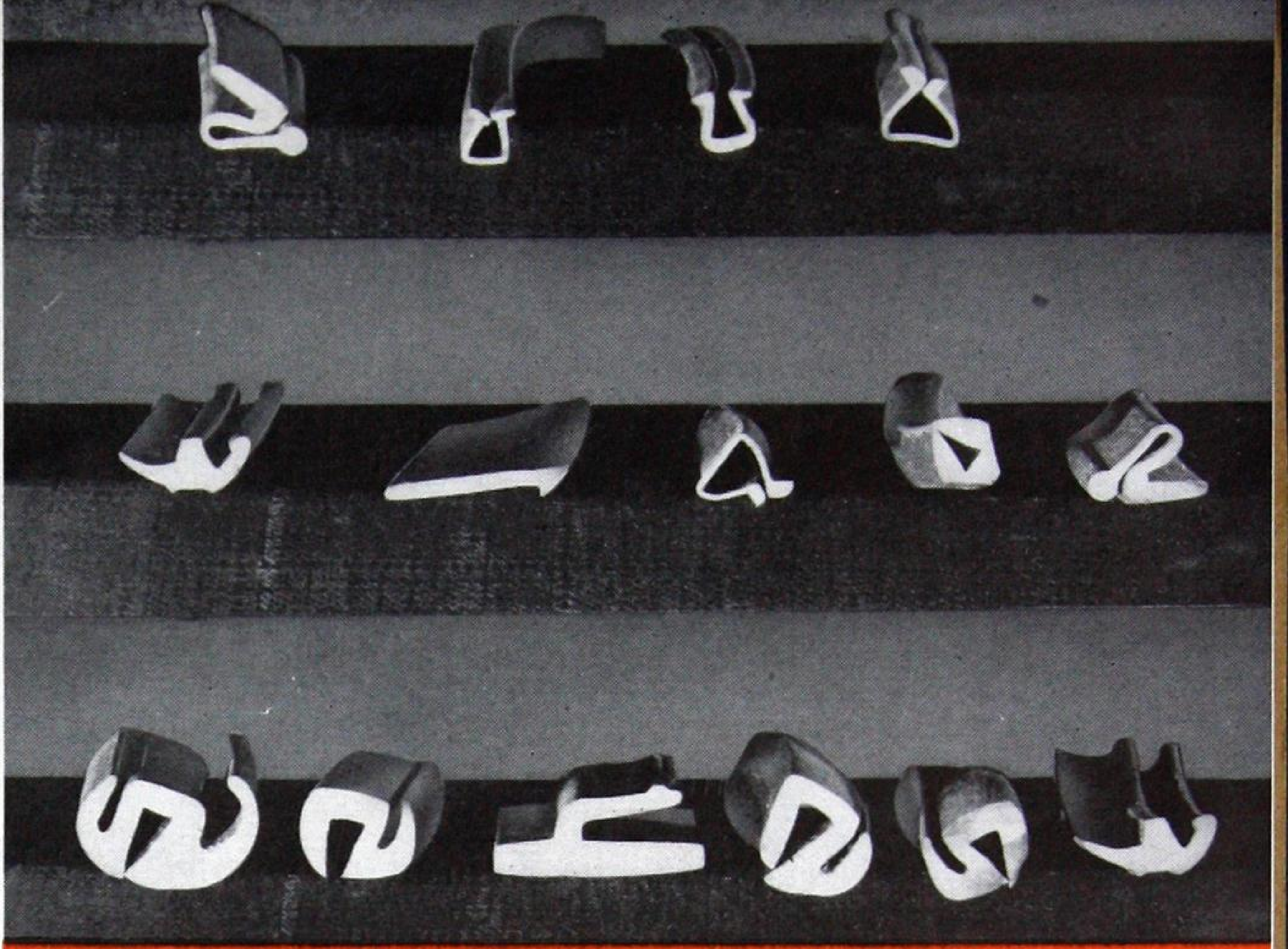


Top: Flat shock absorber for truck cabs. Bottom: Bumper for the rear door ledge of automobiles.

Elastomeric plastic grommets are unaffected by moisture, wear, oils, and chemicals.



Gasoline tank vibration dampers, molded of elastomeric materials, are resistant to vapors, moisture, and wear.



Complex shapes, in continuous strips, with high gloss and rich color, are easily formed from Vinylite elastomeric extrusion compounds.

Extrusion Compounds

Durability is inherent in a wide variety of functional and decorative products which may be extruded into many complex shapes and cross sections from Vinylite elastomeric extrusion compounds. Basically the same material as elastomeric molding compounds, Vinylite elastomeric extrusion compounds are supplied to fabricators in granular or tape form. They are fabricated in a screw type extruder. This machine consists essentially of a horizontal cylinder in which is rotated a modified Archimedean screw. Material is introduced at one end of the screw and carried along the cylinder by the screw. It is heated through contact with the screw and cylinder walls, and forced into the head, and through the tubing die . . . from which it emerges as flexible tubing, rods, special forms, or insulation extruded over wire or other materials. The table on page 18 gives the properties of Vinylite elastomeric extrusion compounds.

Applications

Vinylite elastomeric extrusion compounds have been used in applications from automobile windshield gaskets which must withstand sleet, rain, and ice, to shipboard wire and cable insulation which must resist the attacks of sea water, gasoline, oils, and chemicals. They are utilized by industry as chemical laboratory tubing; beer tubing; electrical conduit tubing; temple rolls; typewriter platens; machinery bumpers; automobile door seals; and automotive wind lacing. They have been adopted for windshield and window gaskets, and weather stripping on many vehicles requiring such protection.

Since these gaskets may be fabricated easily in various shapes and cross-sections, they offer considerable design latitude. A factor important to the appearance and color harmony of an automobile is that these parts may be produced in a variety of colors—colors to either match surrounding color schemes, or provide the proper contrast with them. The ease with which these gaskets may be stretched over glass sections is made possible by the flexible character of Vinylite elastomeric compounds. They fit completely around the glass windshield or window, and serve as a flexible seal between the glass and the metal frame. Consequently, they offer adequate protection against the elements and give the glass a resilient material on which to ride.

Other actual and potential applications of VINYLITE elastomeric extrusion compounds include:

- Battery Tubing
- Earguard Tubing for Goggles
- Catheters
- Decorative Millinery Rods
- Fountain Pen Sacs
- Watch Chains, Key Chains
- Stair Nosings
- Welding Equipment Tubing
- Welting Edges
- Men's Suspenders and Belts
- Refrigerator Drain Tubes

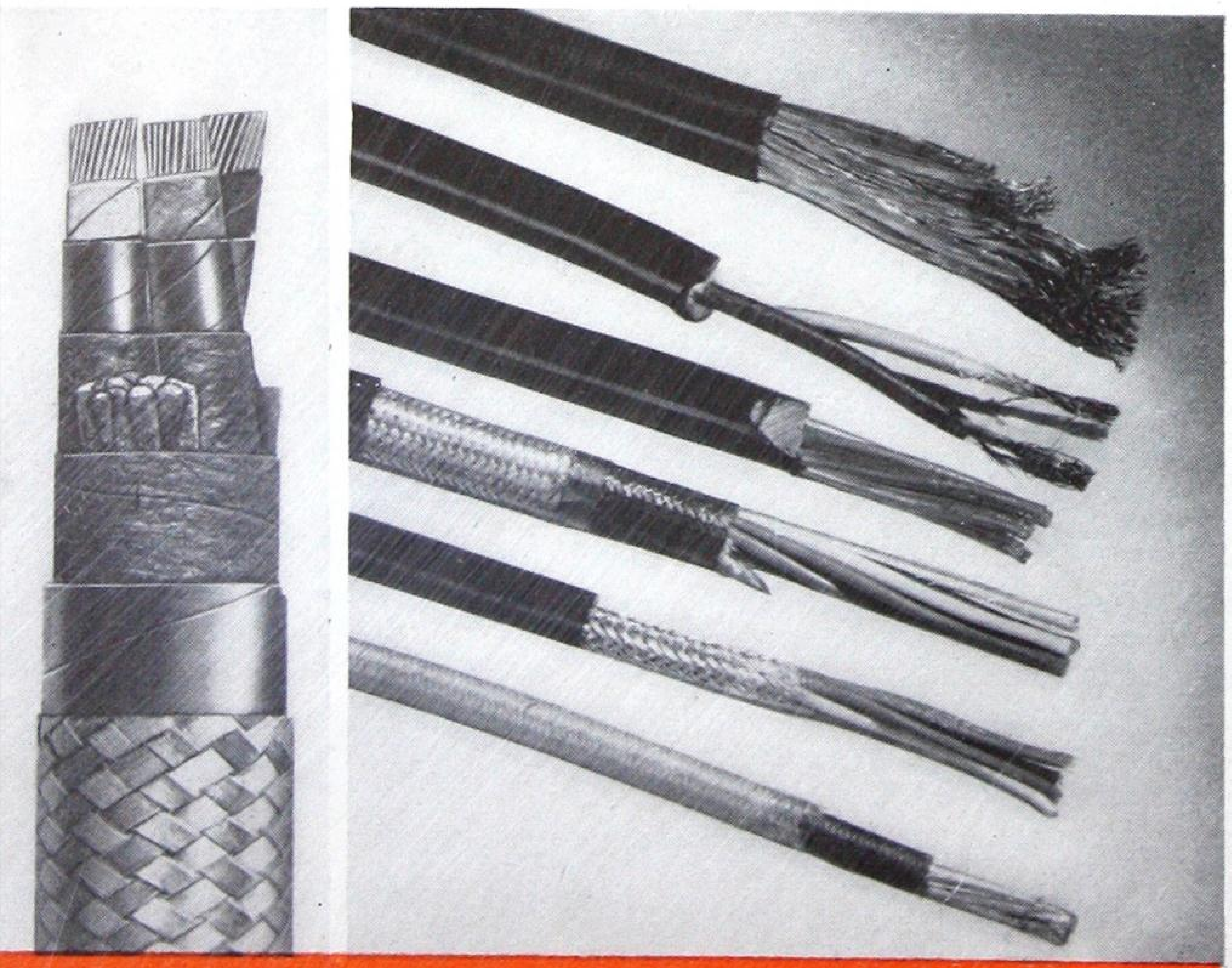
Wire and Cable Insulation. Vinylite elastomeric insulating compounds are employed as cable coverings of two types: *primary insulation* which gives the required electrical insulation and part or all of the mechanical protection; and *the jacket* which provides the mechanical protection and serves as an all-over seal for the cable unit.

They are produced in various formulations and used on numerous types of wire and cable such as:

- Shipboard Power Cable
- Submarine Cable
- Communication Cable
- Sub-Station Wire
- Telephone Wire and Cable
- Switchboard Wire
- Mobile Telephone Wire
- Instrument Wire
- Motor Lead Wire
- Control Wire and Cable
- Small Diameter Building Wire
- Blasting Wire
- Machine Tool Wire
- Electrical Tubing
- Low Tension Circuit Wire
- Household Appliance Wire
- Hearing Aid Device Wire

This flexible plastic insulation provides full protection for wire and cable lying in contact with acid or alkaline soils, or functioning as overhead lines, subject to severe weather . . . installed where chemical fumes are present, or drenched with oil, grease, gasoline, or alcohol . . . exposed to oxidizing attack by air or ozone, or exposed to the photo-chemical effects of sunlight . . . dragged over rough terrain by heavy-duty equipment, or twisted, snarled, and abused by users of household appliances.

As a safety factor, however, wire and cable insulation must be resistant to flame as well as to water, oil, grease, gasoline, and chemicals. Properly formulated Vinylite resin insulation will not support combustion and thus will not initiate flame nor conduct it. The excellent electrical characteristics of Vinylite resin compounds have resulted in their adoption for use where the voltage does not exceed 600 volts, and where the temperature of the conductor does not exceed 60 deg. C. When used with fibrous covering, these compounds are recognized as suitable insulation where operating temperatures may rise to 90 deg. C. The wide color possibilities of these compounds add to simplification in maintenance, since they provide positive circuit identification in complicated assemblies.



Left. Extruded type of vinyl insulation provides multi-layered protection for marine cables.

Right. Vinylite wire and cable insulation serves as primary insulation, where it covers wires themselves and as outer jacketing where it protects against water, chemicals, abrasive wear.

Extruded vinyl tubing protects wiring or in use as laboratory tubing conducts water, chemicals and the like.

Wherever certain sections of the wiring installation are subject to unusually severe abrasion and wear, as in flexible connections to aircraft turrets, extruded "spaghetti" tubing is placed over these sections to prevent cutting through of the primary insulation. In installing, the "spaghetti" tubing is simply cut to the desired length and slipped over the insulated wires where it provides excellent protection.

When used as connector sleeving, or terminal insulation, Vinylite plastic tubing covers the wires that were stripped bare when soldering the terminals, so that here the tubing acts as the primary insulation for the wire. Both the "spaghetti" tubing and the wire are usually stamped, colored, or marked distinctively, making it possible to trace the maze of wires.[1]

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[1] More detailed information on the uses of Vinylite wire and cable compounds may be had by writing to BAKELITE CORPORATION for booklet W-4 entitled "Vinylite Plastics Wire and Cable Insulation."

Flexible Sheeting and Film

VINYLITE plastic flexible sheeting and film are widely used for products requiring long wear and flexing life, elasticity, and chemical stability. These materials, which are produced by the calendering of VINYLITE elastomeric compounds, are supplied in various thicknesses. Flexible sheeting, strong and durable, is produced in thicknesses of .012, .020, and .040 inches with other thicknesses possible. Flexible film, smooth and thin, is produced in thicknesses of .004 and .008 inches. Flexible sheeting and film are materials of both utility and "eye appeal"—utility because they are resistant to tearing, abrasion, and scuffing, and are unaffected by mold and mildew, water, oils, grease, alcohol, and many corrosive chemicals; "eye appeal" because they are provided in transparent, translucent, or opaque colors—in pastel tints or brilliant hues. The table on page 19 shows the properties of VINYLITE plastic flexible sheeting and film.

Beautiful, enduring shoes utilize VINYLITE plastic sheeting for uppers and soles. These shoes may be wiped with a damp cloth to easily clean their surface and restore their original luster instantly.

In calendered form, flexible sheeting and film possess an attractive satin-like texture. By press-polishing, this texture may be transformed into a high sheen—glossy, and brilliant. The material may be readily sewed, seamed, cut, punched, or decorated. Bonding to themselves is achieved by either heat sealing or solvent sealing. Bonding to other materials is accomplished by means of commercial adhesives.

Seats of this bus, upholstered with VINYLITE plastic sheeting, had been in service two and a half years when this photograph was taken. Although the bus carried approximately 1500 passengers a day during this period, the seats showed no signs of wear. They did not stain from spilled liquids, and they were easily cleaned with soap and water.

Applications

VINYLITE plastic flexible sheeting and film are used in an almost endless number of products from medical irrigation bags and electrical insulating tapes to men's belts and women's shoes.

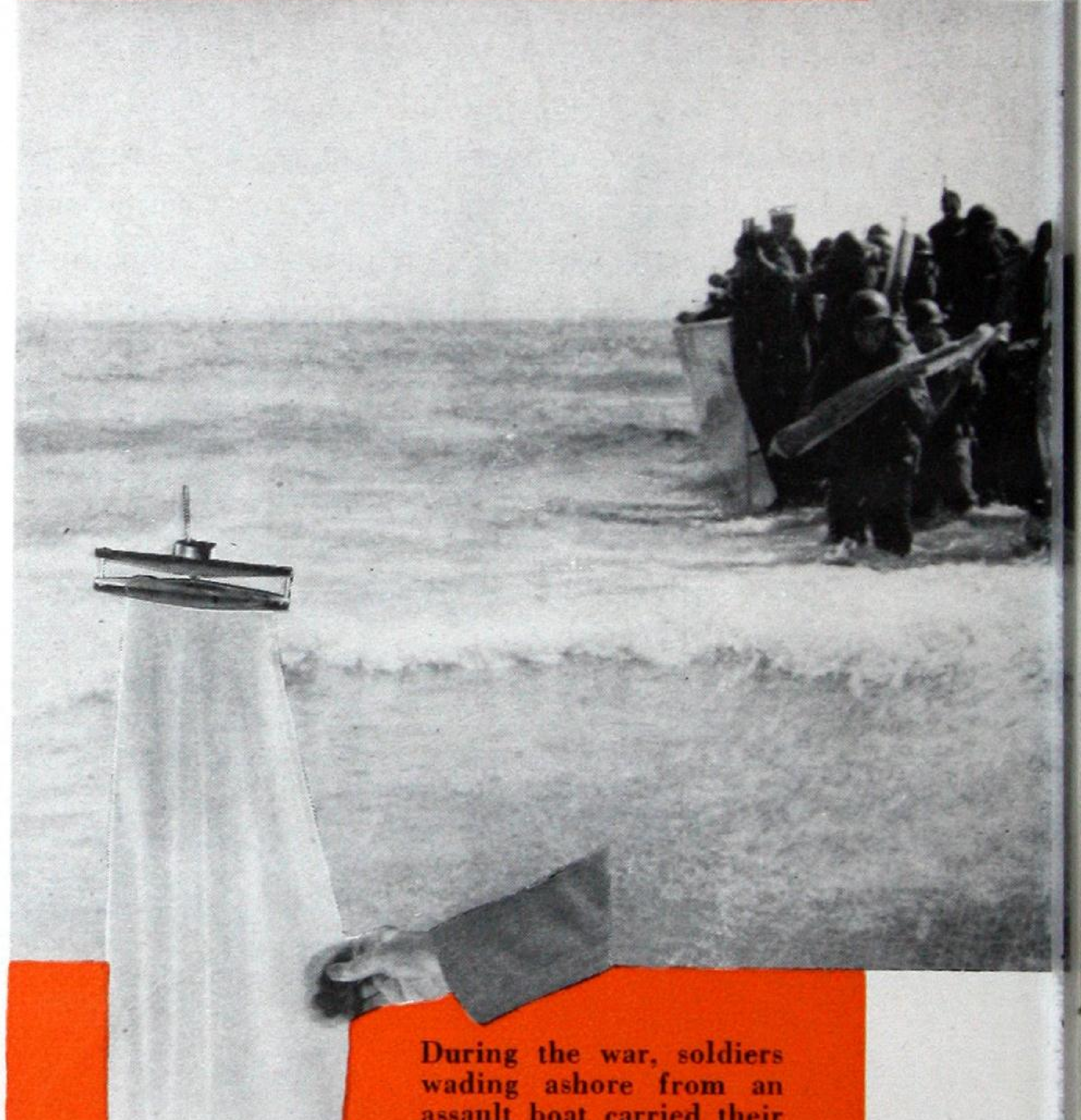
These plastic films are also widely utilized to provide electrical and protective insulation on many types of circuits, including automotive and aircraft lighting harnesses, naval and industrial power cables, and bus bar distributor systems. The films are applied by wrapping. The method of wrapping and thickness of insulation depend on the wire or cable size, voltage stress, and mechanical protection required. After wrapping, the films are often heat-sealed to obtain continuous insulation. Excellent electrical and mechanical protection is thus provided, combined with the

High-styled handbag of VINYLITE high gloss plastic sheeting adds an "extra touch" of enduring quality to chic ensembles.

These smart shoes have durable VINYLITE plastic soles which are light in weight, will not slip readily on water-wet surfaces, and will not mar floors.

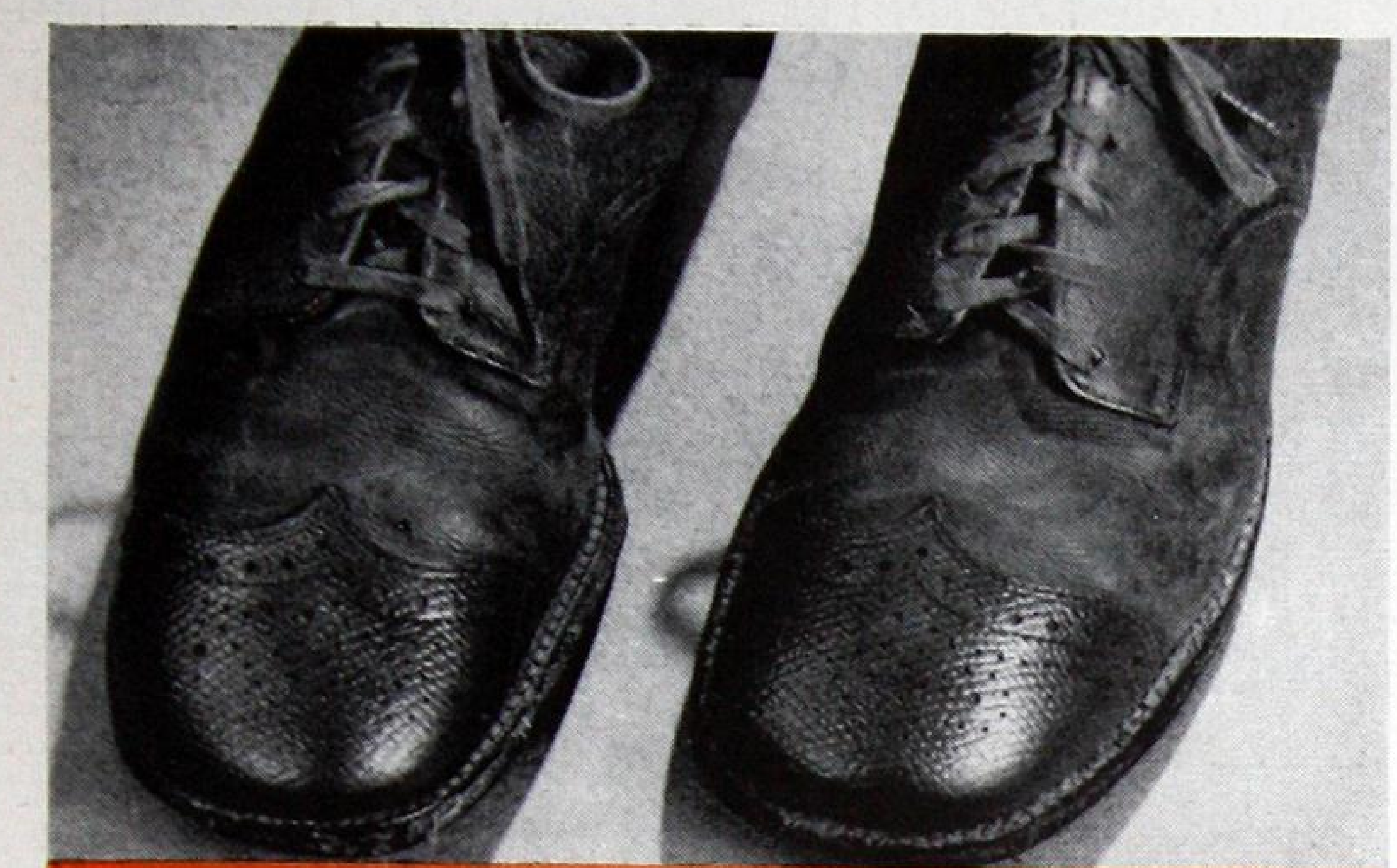
desirable properties of flame resistance, low temperature flexibility, and resistance to air, water, oils, and corrosive chemicals.

During the war VINYLITE plastic flexible sheeting and film proved of lasting service as waterproof, greaseproof coverings for rifles and other ordnance equipment; pistol covers tailored to fit the contours of sidearms; desalting kits and solar still bags in which salt water was converted into fresh water; aerial delivery bags which contained water or other liquids and were dropped by parachute to isolated units of troops; flexible water bottles which assured pure fresh water to survivors of torpedoed ships, or soldiers and marines far from their bases of operation; and flexible

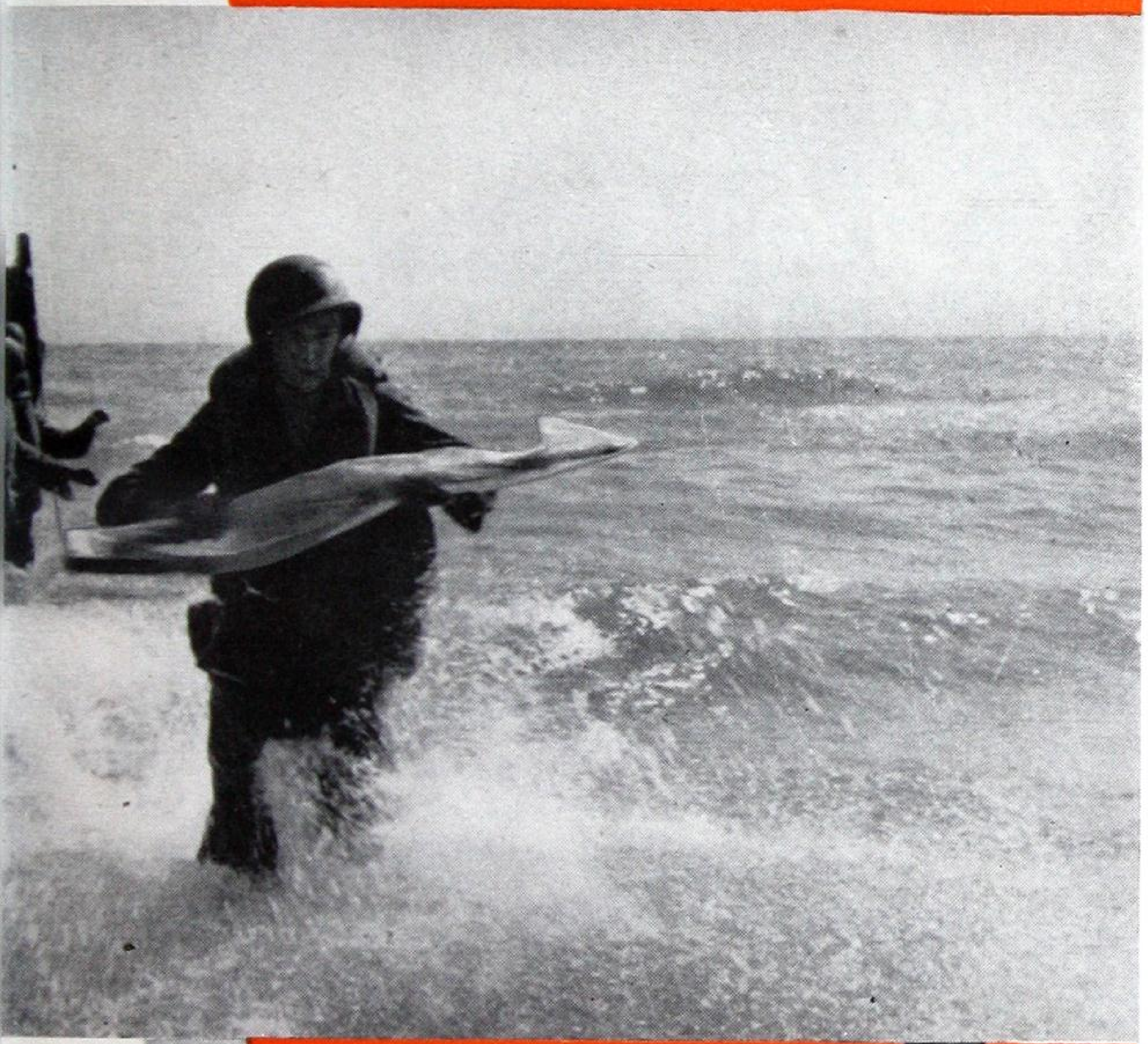


During the war, soldiers wading ashore from an assault boat carried their rifle in VINYLITE plastic film covers, which were knotted at the ends to protect the rifles against salt water and sand. For shipment of rifles, the edges of this cover were heat-sealed.

This light, compact aerial delivery bag of VINYLITE flexible plastic sheeting is resistant to severe impact received on contact with ground.



On this pair of "tested" shoes, the toes, made of VINYLITE plastic shoe tipping, are as good as new, while the leather uppers show considerable wear. This type shoe tipping and foxing may be embossed and produced in various colors.



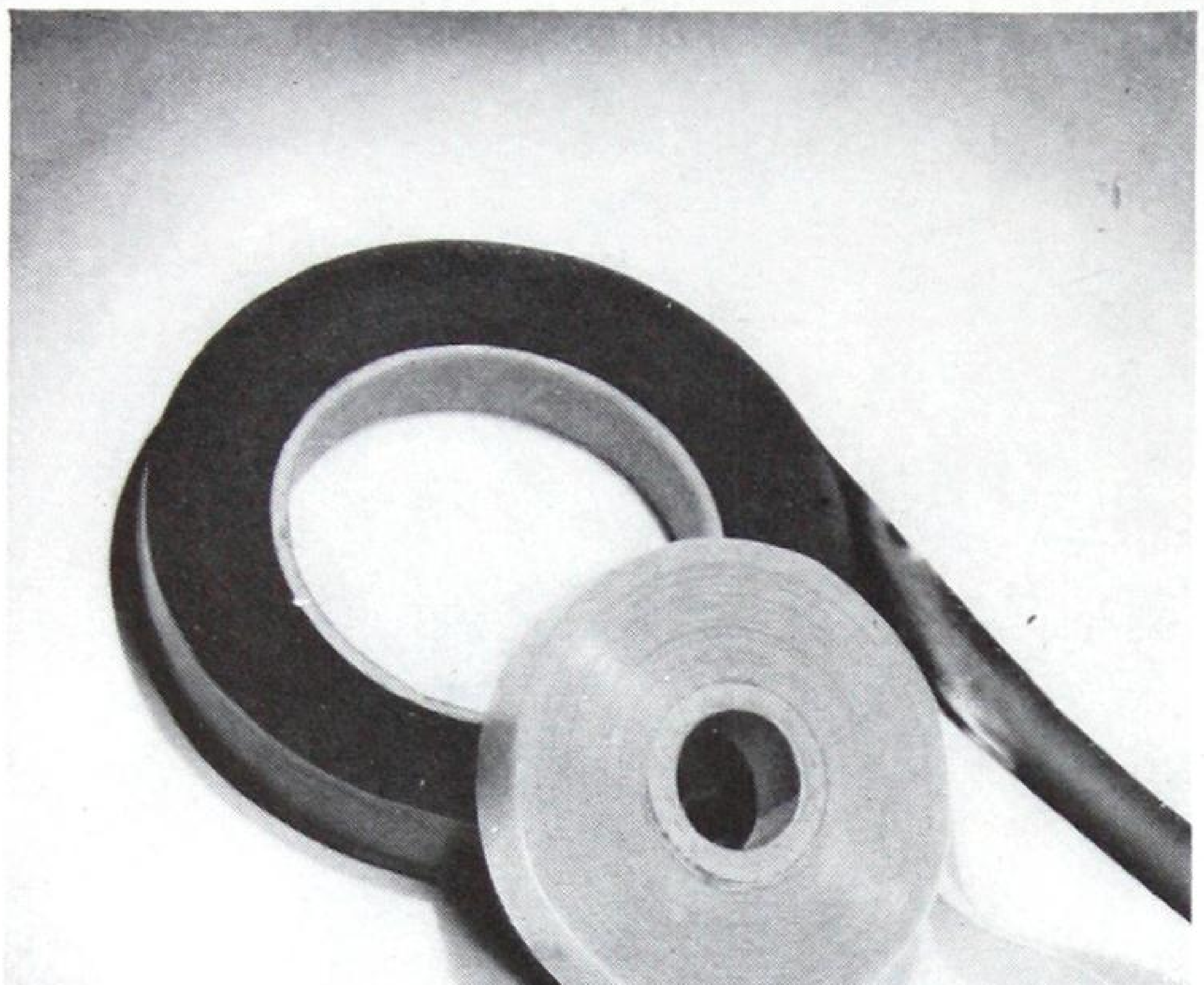
In various sizes, water bottles, fabricated of tasteless, non-toxic VINYLITE plastic sheeting, assure pure fresh water.

VINYLITE plastic film lends itself to unusually attractive designs for rainproof apparel.

canteen bags which could also be employed to protect rations and personal belongings from moisture and insects.

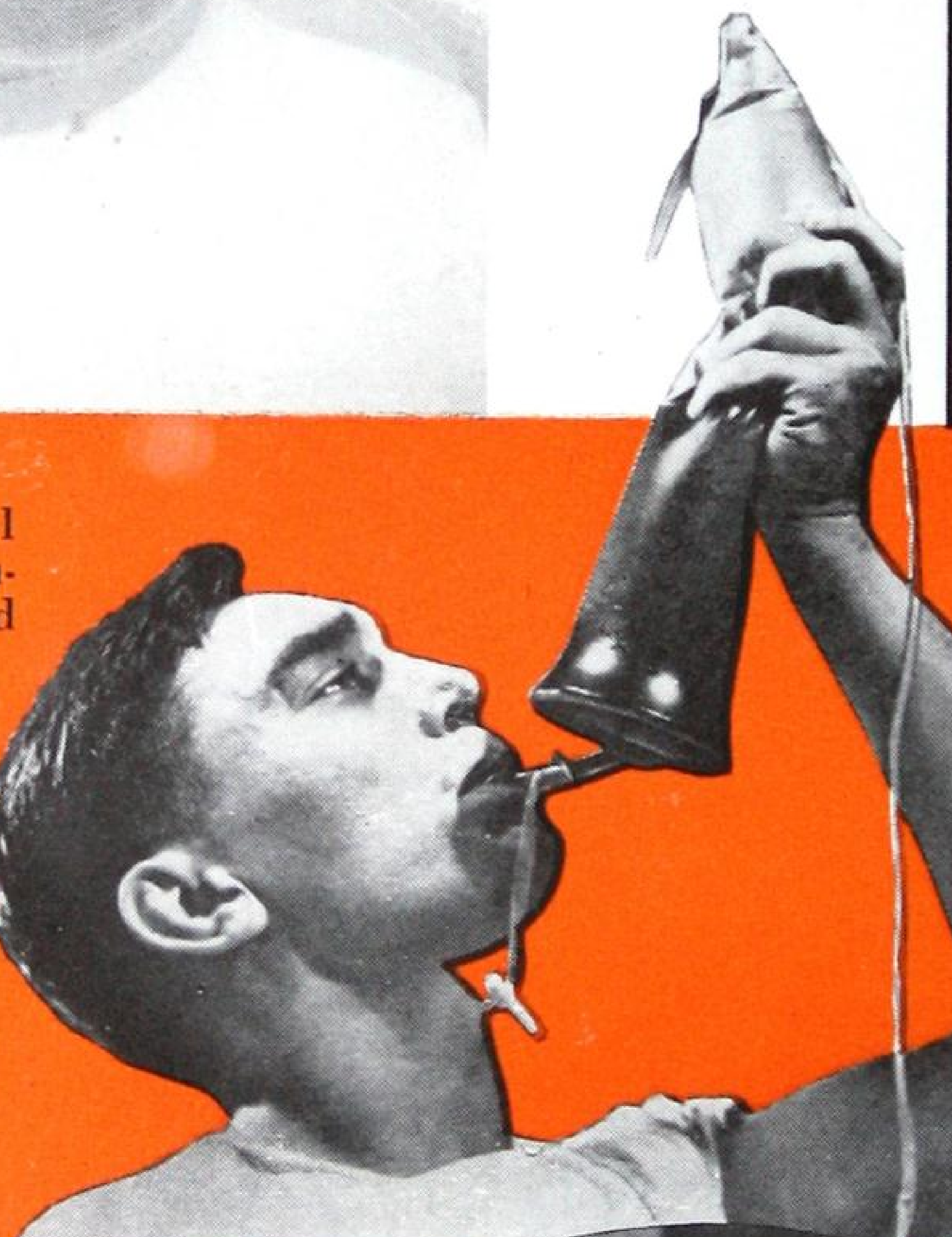
Men's haberdashery, including wallets, belts, and suspenders (see Extrusion Compounds—Applications, Page 9), has been made more enduring and attractive by VINYLITE plastic flexible sheeting. This lustrous sheeting has become of increasing value in the shoe and handbag fields. It provides handbags of distinctive style, attractive shoe uppers, shoe soles that are waterproof and long wearing, shoe tipping and foxing which possess excellent abrasion resistance.

Transparent colored raincoats of VINYLITE plastic flexible film are waterproof, light in weight, strong and durable. For the housewife, VINYLITE plastic flexible films make especially practical household smocks and colored aprons which are unaffected by spilled foods, are easy to clean and protect the most dainty garment. These flexible films also serve as attractive, long-lasting shower curtains, window curtains and drapes.



Industrial tapes, cut from special types of VINYLITE plastic film, insulate electro-plating equipment and low-voltage electrical cables.

Shower curtains of VINYLITE plastic film brighten a bathroom, and are completely waterproof and long-wearing.



This desalination bag made of flexible vinyl film and sheeting provided six pints of fresh water, yet occupied a space on a life-raft equivalent to the size of a one pint can. It was supplied with chemical briquets which facilitated the purifying of sea water.

Strips of VINYLITE plastic flexible sheeting add to the appearance and durability of modern chairs.

Tobacco in this serviceable pouch fabricated from VINYLITE plastic flexible film retains both its aroma and original moisture content.

Other applications of VINYLITE plastic sheeting and film include:

Flexible Sheeting

- Conveyor Belting
- Garters
- Key Cases
- Map Cases
- Upholstery (woven strips)
- Tank Linings—Chemical Resistant
- Industrial Belting
- Gaskets and Washers (die-punched)

Flexible Film

- Bowl Covers
- Crib Sheet
- Dress Shields
- Garment Bags
- Pillow and Mattress Covers
- Protective Clothing (Industrial)
- Window Curtains

Army raincoats are neat in appearance, crease-proof, and completely waterproof.

Cloth-Coating Resins

When applied to cloth, VINYLITE elastomeric compounds assure a fabric that is attractive, durable, and long-wearing. VINYLITE resins are supplied as powdered base resins for compounding with plasticizers and other necessary components into cloth-coatings. These coatings impart high moisture resistance, chemical resistance, and abrasion resistance. Cloth coated with VINYLITE elastomeric compounds is capable of withstanding extensive flexing. Even at low temperatures this material does not become brittle.

Modern soldier wore his tent, an Army poncho.

Applications

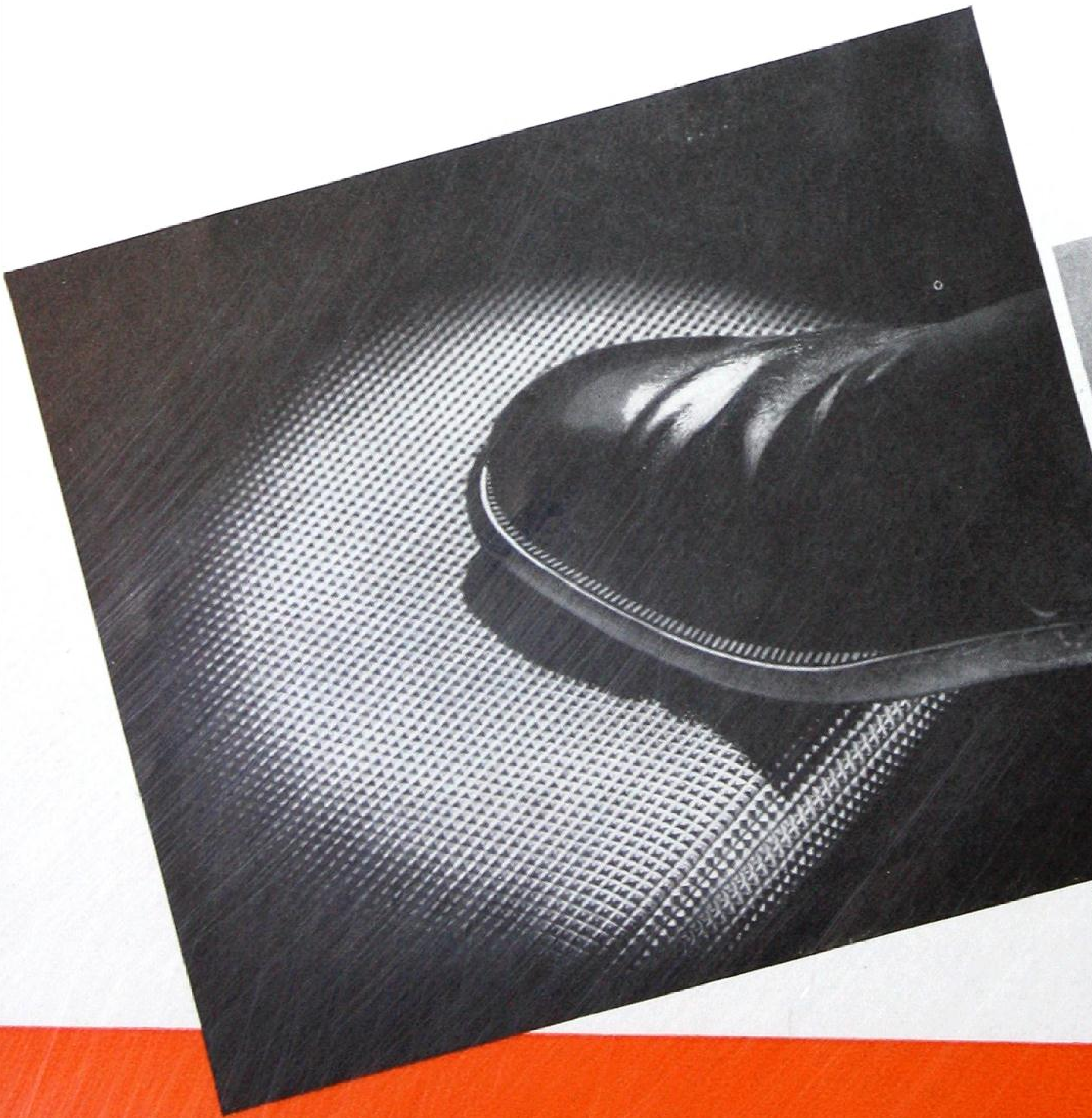
The uses of cloth coated with these compounds range from home, office, and automotive upholstery to chemically resistant hospital sheeting and industrial protective clothing. Upholstering materials must pass two tests. They must be comfortable to the user and since they are subject to rough usage during their lifetime, they must be moisture-resistant, tough and durable. In providing these qualifications, cloth coated with VINYLITE elastomeric compounds has proved to be superior upholstering material. In one test

Attractive automobile upholstery of cloth plus elastomeric compounds is comfortable and resistant to rough usage.

this type of material was used for the covering of a taxicab seat, which was exposed to vigorous wear for over 100,000 miles. Since a taxicab travels over all types of roads, and the driver is in and out of the cab continuously, the seat was subjected to wear, flexing, weathering, and general abrasion. None of these harmed this durable upholstery which remained in excellent condition.

Paulins, cloth-coated with VINYLITE elastomeric compounds, enable airplanes literally to carry their own hangars. Upon landing in a locale where there are no hangar facilities, the planes are covered with lightweight paulins as protection against snow, ice, and rain. These paulins which withstand arctic cold and tropic heat are of invaluable assistance in getting aircraft into the air instantly.

Cloth coated with VINYLITE elastomeric compounds is employed in place of rubber sheeting as a chemically resistant material used to protect hospital bedding. A fabric interlayer prevents excessive stretching and makes it easier to pull sheeting from under a patient. In addition to resisting alcohol, steam sterilization, carbolic acid, chlorine type disinfectants, and other corrosive agents, the sheeting is also resistant to mineral oil.



Non-skid, non-scuff floor mats for aircraft are made of VINYLITE elastomeric compounds calendered onto cloth base. Surfaces are embossed.

Chemically resistant hospital sheeting consists of fabric calendered on both sides with VINYLITE elastomeric compound.

Army raincoats, light in weight and easily folded, are waterproofed with VINYLITE elastomeric compounds. Fighting men discovered that Army ponchos, coated with these compounds, were valuable additions to their rainwear. During the war, waterproof ponchos served as foxhole covers, ground sheets to protect men or material from ground moisture, moisture-impervious bedrolls, or tents when two or more were hooked together.

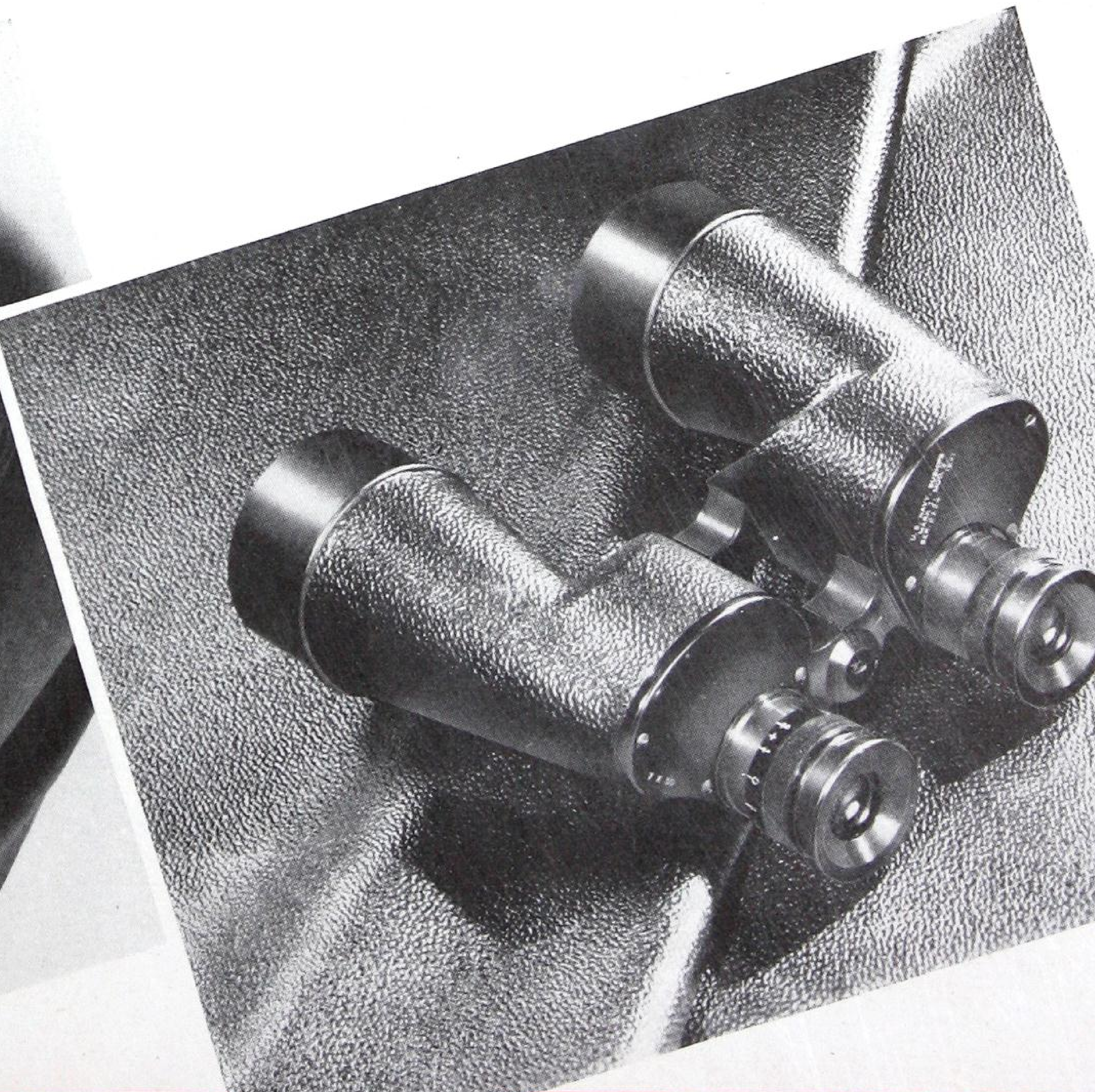
This combination, cloth plus VINYLITE elastomeric compounds, is also widely employed to provide industrial protective clothing, non-skid, non-scuff aircraft floor mats, water-resistant pontoons, and tough, flexible truck covers.

Other actual and potential applications of this combination include:

Typewriter, Instrument Coverings
Golf Bags
Handbags and Brief Cases
Luggage
Notebook Covers
Shoe Materials (Linings and Bindings)
Insulating Tapes
Raincoats
Tenting
Hunting Gear

Book binders made with VINYLITE resin-coated fabrics not only possess a luxurious appearance but are scuff- and crack-resistant.

This taxicab seat upholstered with VINYLITE elastomeric compound coated cloth has withstood 100,000 miles of driving.



Covering for binoculars is produced by calendering VINYLITE elastomeric compound onto an anti-fungus treated cotton cloth.

Average Properties of
Typical "VINYLITE" Elastomeric Compounds

Properties	*Molding Compounds*				*Extrusion Compounds*		
	VG5927 O.D.	*VGW-2942-1 Gray*	*VG1947 Nat.*	*VG7734 Black*	*VU-1960 Nat.*	*VE-1904 Clear*	*VE-1907 Nat.*
Specific Gravity	1.26	1.37	1.17	1.38	1.14	1.20	1.22
Durometer (±10)	90	70	60	60	50	—	80
Tensile Strength, lb. per sq. in.	3,200	2,400	1,600	1,200	1,000	1,800	2,500
Ultimate Elongation, per cent.	300	250	400	280	350	350	250
Stiffness, lb. per sq. in. at 25°C.	2,800	600	350	540	280	500	900
0°C.	55,000	6,000	800	2,000	470	1,400	3,800
−25°C.	280,000	90,000	5,200	15,000	1,500	7,000	45,000
−50°C.	—	400,000	190,000	200,000	15,000	82,000	240,000
Brittle Temperature	−30°C. (−22°F.)	−20°C. (−4°F.)	−45°C. (−49°F.)	−30°C. (−22°F.)	−60°C. (−76°F.)	−45°C. (−49°F.)	−40°C. (−40°F.)
Tear Resistance, lb. per in.	580	400	180	170	150	—	350
Water Absorption (0.075 in. spec.):							
Water Absorbed, per cent.	0.20	—	0.30	0.90	0.30	—	0.20
Soluble matter lost, per cent.	0.10	—	0.10	0.20	0.10	—	0.08
Flammability, sq. in. per sec. (0.020 in. thick)	0.25	—	—	0.35	0.35	—	0.50
(0.040 in. thick)	—	—	—	0.25	0.30	—	—
(0.050 in. thick)	—	self-extinguishing	—	—	—	0.40	—
Dielectric Strength, volts per mil. 0.075 in. specimen (short-time test)	—	—	400	350	275	—	—

Average Properties of Typical "VINYLITE" Elastomeric Compounds

Properties	Sheeting			Film
	VU-1920 *Clear*	*VU-1950* *Clear*	*VU-1330* *Clear*	*VU-1900* *Clear*
Specific Gravity	1.27	1.20	1.26	1.23
Durometer (±10)	90	65	65	—
Tensile Strength, lb. per sq. in.	3,200	1,900	2,600	3,000
Ultimate Elongation, per cent	300	400	250	225
Stiffness, lb. per sq. in. at 25°C.	3,500	400	600	1,300
0°C.	65,000	1,300	26,000	10,000
−25°C.	250,000	27,000	165,000	90,000
−50°C.	—	175,000	370,000	370,000
Brittle Temperature	−25°C. (−13°F.)	−45°C. (−49°F.)	−22°C. (−7°F.)	−37°C. (−34.6°F.)
Tear Resistance, lb. per in.	700	225	430	—
Water Absorption (0.075 in. spec.):				
Water Absorbed, per cent	0.11	0.16	0.25	—
Soluble Matter Lost, per cent	0.03	0.05	0.10	—
Tear Resistance (Elmendorf), grams per mil:				
Machine Direction	—	—	—	70
Transverse Direction	—	—	—	170

NOTE: The compounds described in these tables are typical VINYLITE elastomeric compounds. They are by no means comprehensive, but they are an indication of the valuable properties which may be obtained with these compounds. With the exception of the properties of VU-1900 film which were obtained by separate tests, the properties evaluated in these tables were determined by methods prescribed in A.S.T.M. specification D 742-44T.

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